PATENT CLAIMS

1. A detector base unit (200) specially adapted to a system (400) for position determination of objects in motion and for use in rooms with different kinds of noise such as line interference,
characterised in that it comprises:
- signal processing means (260) for receiving and sampling several different signals,
- means (230) for performing the following steps for processing the received data:
- analog to digital conversion of the sampled signals;
- transmission to a memory (240) for intermediate storage of digitalised signals;
- categorisation of the signals in frequency blocks for further processing with Fourier transform for calculation of Doppler shift from the position to the frequency block with the strongest signal;
- use of line detector for detection of single-frequency noise sources on the different signals, for correcting and providing accepted data;
- pattern comparison of all bits in order in order to determine a signature which is characterising for time and Doppler shift;
- warning to a central unit (410) via a network interface (215) when a sufficient volume of accepted data has been processed and is ready for further processing in the central unit (410), and
- transmission of the data to the central unit (410).

2. A detector base unit (200) according to claim 1,
characterised in that signal processing means (260) are arranged for sampling at least 2, typically 8 channels.

3. A detector base unit (200) according to claim 1,
characterised in that fractional Fourier transform is employed when the transmitters transmit chirp FSK signals.

4. A transmitter unit (100) for use in a system (400) for determining the position of objects that may be in motion in a room with noise such as line interference,
characterised in that the transmitter unit (100) comprises an ultrasound transducer (190) adapted for transmitting signals with several different base frequencies and also a control unit (160) for controlling the signal transmission.

5. A transmitter unit (100) according to claim 4,
characterised in that it comprises a transducer (190) and a receiver unit (180) for detecting whether other transmitter units (100) are transmitting signals at the same time as the unit itself intends to perform transmission of signals, that the control unit (160) is adapted to control transmission of ultrasound signals, with the result

that this only takes place when no other transmitter units (100) are transmitting signals.

6. A transmitter unit (100) according to claim 4, characterised in that it is adapted to transmit at least two, typically eight base frequencies in the ultrasound range by means of FSK.

7. A transmitter unit (100) according to claim 4, characterised in that in addition to the various base frequencies, the ultrasound transducer (190) is adapted to vary the different base frequencies with rising and descending frequencies in the form of chirp FSK.

8. A transmitter unit (100) according to claim 4, characterised in that the control unit (160) is adapted to activate the ultrasound transducer (190) asynchronously according to preset time frames and/or detection of movement.

9. A transmitter unit (100) according to claim 4, characterised in that the control unit (160) is adapted to activate the ultrasound transducer (190) so that it starts transmitting signals if attempts are made to remove and/or open the transmitter unit (100).

10. A system (400) for position determination of at least one transmitter unit (100) in rooms with different kinds of noise such as line interference, characterised in that it comprises:
- at least one transmitter unit (100) with one ultrasound transducer (190) for transmitting signals on several different frequencies,
- one transducer (270) and at least one more receiver unit (290) for detecting ultrasound signals,
- at least one detector base unit (200) for signal processing connected to the receiver units (290),
- a network (215) that interconnects several detector base units (200), plus
- at least one central unit (410) for acquisition and interpretation of processed data from detector base units (200) via the network connection (215), and where the data volume transmitted from the detector base units (200) to the central unit(s) (410) is reduced to a minimum since signal noise and non-essential signal components are substantially removed from the signals by means of signal processing in the detector base unit (200) before transmission of the signals to the central unit(s) (410), plus
- processing means in the central unit(s) (410) for determining the position of a transmitter unit (100).

11. A method for determining the position of one or more transmitter units (100) in rooms with various kinds of noise such as line interference, characterised in that the method comprises:

- transmitting from the transmitter unit (100) ultrasound signals with several different frequencies,
- sampling the signals in a detector base unit (200) received from at least two detector units (290), and furthermore performing the following steps for processing the received data:
- analog to digital conversion of the sampled signals;
- intermediate storage of sampled and accumulated values;
- categorisation of resulting data from the signals in frequency blocks for further processing with Fourier transform for calculation of Doppler shift based on the position of the frequency block with the strongest signal;
- differentiating filtering as a function of time for reduction of single-frequency noise sources on the different signals, in order to obtain accepted data;
- pattern comparison of all bits in order to determine a signature which is characterising for time and Doppler shift;
- warning to a central unit (410) via a network interface (215) when a sufficient volume of accepted data has been processed in the detector base unit(s) (200) and is ready for further processing in the central unit (410);
- transmission of the data to the central unit (410), and
- comparison of received signal parameters from several detector units (290) in a room for determining the position of transmitter units (100) in the room.

12. A method according to claim 11, characterised in that fractional Fourier transform is employed when the transmitter units (100) transmit chirp FSK signals.

13. A method according to claim 11, characterised in that the compared signal parameters are signal strength.